

## MOSQUITO NOTES.—No. 3.

BY C. S. LUDLOW, M. SC.,

Laboratory of the Office of the Surgeon General, U. S. A., Washington, D. C.

In a very interesting collection of mosquitoes lately sent me from the Philippine Islands by Dr. Eugene R. Whitmore, 1st Lt. Asst. Surg. U. S. A., occur a couple of forms which seem entitled to position as new genera, and some others of merely specific interest. The new genera are separated, in the first instance by a combination of values that makes it seem secure, while in the second case it lies between *Finlaya* and *Macleaya*, and the differences are not so marked.

*Reedomyia*, nov. gen.—Head covered with slender curved scales, forked scales on the occiput, and flat lateral ones, as in *Culex*; palpi two jointed in the female; thorax clothed with curved scales; scutellum with broad flat scales only; metanotum nude; fork cells of wing short.

The genus is named after Major Walter Reed, Surgeon U. S. A., whose invaluable work in proving *Stegomyia fasciata*, Fab., the intermediate host in the transmission of "yellow fever" is too well known to need more than mention.

*Reedomyia Pampangensis*, n. sp.—♀. Head densely covered with slender curved scales and flat lateral ones; a brown triangular (base caudad) median spot bordered by a white stripe, followed laterally by brown scales and then by lateral white flat scales, no tuft of scales between the eyes, but many bristles around the eyes, and a border of curved light-yellow scales around the eyes, fork scales numerous and extending well up on the vertex; antennæ brown, verticels and pubescence brown, basal joint light brown and partly brown scaled, first joint has a few brown scales; palpi brown, somewhat constricted at base of ultimate joint; proboscis brown dorsally, and fawn coloured ventrally to about three-quarters its length, apical quarter dark, tip brown; eyes brown; clypeus brown.

Thorax when viewed directly from above is of general reddish brown colour and darker in other lights; prothoracic lobes testaceous with white slender curved scales and dark brown bristles. In these specimens, as in some others lately received, these lobes appear to be stalked, the stalks running in a curve up the cephalic aspect of the thorax, and the "lobes" on the dorsal end as a cap, reminding one somewhat of a "mushroom." Mesonotum is a light reddish brown with light yellow and dark brown slender curved scales rather indefinitely arranged—an indefinite white

band across the cephalic end—a narrow indefinite light lateral band extending half way to wing joint, and a small spot dorsad of the end of this line, but the markings are very indefinite, general effect being a reddish brown, sparsely covered with an irregular arrangement of dark and yellowish scales. A heavy bunch of dark brown bristles near the wing joint, and a short line of very long and heavy dark brown bristles on either side of the "bare spot." Scutellum light brown, all three lobes densely covered with broad flat white scales; six large bristles on mid-lobe and several smaller ones also; metanotum brown, bare. The brilliant white scutellum is very effective and marks the insect at once.

Abdomen light, covered with brown flat scales and many golden apical hairs, with now and then a suggestion of narrow white basal bands, and with distinct white basal lateral spots. Venter partly white scaled, but with brown apical bands.

Legs, coxæ and trochanters light, white scaled; hind femora light at the base, otherwise all the femora brown scaled dorsally—creamy scaled on the ventral side; a brilliant white apical spot; all the tarsal joints brown. The legs are rather prominently light bristled throughout, which even suggests, with the hand lens, light spots on the hind tibiæ. Fore unguis large, equal and uniserrate.

Wings clear yellowish, covered with dark brown scales, except a small spot at the very base of the costa, which is brilliant white. Cells short; scales rather broad and truncate, costal edge shows some tendency to the spinous scales found in *Uranotaenia*. First submarginal is about a sixth longer and the same width as the 2nd posterior, the stems of each about the same length and about two-thirds as long as the cells; mid and supernumerary cross-veins meet and are nearly equal, posterior cross-vein is a trifle shorter and distant twice its own length from the mid. Halteres light, with dark knob.

Length, 4-5 mm.

Habitat.—Angeles, Pampanga, Luzon, P.I. Taken in Sept.

Described from three specimens sent by Dr. Eugene R. Whitmore, 1st Lt. Asst. Surg. U.S.A., marked "Caught in the woods and in the Quarters."

*Popea*, nov. gen.—Head covered with flat, forked, and slender curved scales, the latter occurring *only* on the median line; palpi long in the male; thorax with slender curved scales; scutellum with median scales on each lobe flat, and slender curved scales between the lobes and

forming an apical border to all the lobes. Abdomen normal in shape, bearing ventral medium tufts of long clavate scales. Wing cells short, and the scales suggesting *Taeniorhynchus*; unguis uniserrate in the male. This evidently lies between *Finlaya*, Theob., and *Macleaya*, Theob.

The genus is named in honour of Lt.-Col. B. F. Pope, Deputy Surg. Gen. U.S.A., under whose authority, as Chief Surgeon Division of the P. I., this investigation was originally begun in connection with the work of the Board of Health, Manila.

*Popea lutea*, n. sp.—♂. Head covered on median line with curved white scales, the remainder of the head with flat and a few forked scales, a narrow stripe of yellow flat scales next to the median line of curved ones, then a broader stripe of brown flat scales, followed by white flat scales; brown and yellow forked scales on the occiput, white ones near the vertex, a few light hairs projecting forward; antennæ plumose, light brown, light bands on each joint, a few dark flat scales on the first joint, basal joint brown, a few white flat scales on the median side; palpi light, long and slender, irregularly mottled with yellow, white and brown scales, the tuft is small and light coloured, tip dark; proboscis rather heavily scaled, mottled yellow and brown, the basal part brown, followed very irregularly by deep ochraceous yellow, so that it amounts to a broad irregularly shaped band, the apex narrowly brown, (tip missing); eyes brown; clypeus brown.

Thorax brown, prothoracic lobes brown scaled, with yellow and white flat scales; mesonotum brown, covered with yellow, white and brown curved scales arranged in indefinite groups, yellow, flat scales at the nape; pleura dark brown, with patches of white clavate flat scales; scutellum testaceous, the median portion of each lobe with flat, the interlobular parts and caudal edge with rather closely placed slender curved scales; the flat scales on the median lobe are brown, with a line of yellow at each side, those on the lateral lobes are brown, the curved scales are light sulphur yellow, fine bristles on median lobe; metanotum brown, bare.

Abdomen light, covered with dark brown and yellow scales, mostly yellow; a broken median line of dark brown irregularly-placed spots—*i. e.*, sometimes apical, sometimes basal—extends the whole length of the abdomen, and the ultimate segment has an apical brown band, the broad lateral yellow stripe is occasionally broken by a few brown scales, but the effect is distinctly yellow: yellow apical, lateral and ventral hairs; venter yellow, white and brown, there are well-marked tufts of long

brown scales on the median line of the venter on most of the segments, but on the ultimate segment the tuft is yellow. These scales are clavate, and not denticulate. A few white scales appear in connection with the lateral (yellow) stripes and the dorsal basal white band on the ultimate segment is largely of white scales. The claspers are large and there is a fan-shaped tuft of long yellow spatulate scales just beside them on the ventral side.

Legs all mottled; coxæ and trochanters testaceous with white and brown scales, femora irregularly spotted with brown and white scales, a few yellow ones also occur; tibiæ much lighter, and mostly yellow scaled, a few brown scales in small bunches giving the mottled look; tarsal joints mostly yellow scaled, on the hind legs there are tiny basal brown spots; in the fore and mid legs the brown scales are somewhat lighter and have no definite arrangement, but the last tarsal on the fore legs are mostly covered with these lighter brown scales. Ungues slightly unequal, both uniserrate, hind unguis equal and simple.

Wings very light and delicate and of slightly yellowish cast, covered with broad yellow and brown median and lateral scales, suggesting *Taeniorhynchus* scales; the ventral scales are, however, slender. The wing is apparently partly denuded, but the apex is light, and there is a well-marked yellow costal spot near the junction of sub-costa and extending on the wing field to the 3rd longitudinal in the vicinity of the cross-veins; there is a smaller yellow spot on the costa interior to this, and the costa is light continuously from the base of the wing nearly one third its length; the fork cells are small, nearly as small as those of *Uranotaenia*, and the costa has spinous scales as in that genus; 1st submarginal is a little longer and a little narrower than 2nd posterior. Mid and supernumerary cross-veins meet and are about equal in length, posterior cross-vein is about same length as the others and distant from the mid nearly twice its own length, interior. Basal cell is very long. Halteres light, knob mostly yellow scaled.

Length, 5.5 mm.

Habitat.—Camp Stotzenberg, Angeles Fampanga, Luzon, P. I.  
Taken Sept.

Described from one very perfect specimen sent by 1st Lt. Eugene R. Whitmore, Asst. Sug. U.S.A., with the legend, "Caught in the woods and banana trees."

This is a very beautiful sulphur yellow and brown species, and the peculiar scaling of the scutellum, the short fork cells, broad wing scales and abdominal tufts assign it at once to its place between *Finlaya* and *Macleaya*.

*Taeniorhynchus argenteus*, n. sp.—♀. Head dark brown, almost black, covered with white curved scales, white and light ochraceous fork scales, and a few brown mixed with the white flat lateral scales, small white curved scales between the eyes, and a few dark brown bristles around the eyes; antennæ brown, verticels dark brown, pubescence white, basal joint testaceous; palpi dark brown with a few white scales at the tip; proboscis dark brown, with ochraceous band at basal part of apical half; clypeus dark brown; eyes brown and gold.

Thorax: prothoracic lobes brown, with white curved scales, and a few brown bristles; mesonotum dark brown, almost black, covered with white curved scales, except two ante-scutellar sub-median brown bar-like spots projecting forward from the scutellum about one third the length of the mesonotum, and two very small round brown spots nearer the cephalic end; there are also a few light bristles, but not making distinctly marked lines. Scutellum dark brown, with white curved scales, and brown bristles, six on edge of median lobe, four on each of the lateral lobes; pleura dark brown, with small bunches of white flat scales; metanotum dark brown.

Abdomen dark brown, narrow basal light (slightly ochraceous) bands, occasionally a few apical light scales, small basal white lateral spots on some of the segments; ventrally mostly light scaled.

Legs, coxæ and trochanters dark brown and white scales; all the femora dark brown, with a sprinkling of white scales, so as to make them quite speckled, ventrally lighter, and on the mid and fore legs mostly light scaled; tibiæ of mid legs markedly speckled, the others darker; metatarsus brown on all the legs; with small basal light bands, and the other tarsal joints are also brown and have small basal light spots, sometimes developed into bands, except the ultimate joint of the hind legs, which is dark throughout. Sometimes these spots or bands are very faint. Ungues simple and equal.

Wings clear, rather heavily brown-scaled, especially in the apical half; the median scales heavy, clavate, somewhat truncate, the lateral scales spatulate, and the ventral scales slender; the ventral scaling is unusually heavy. Fork cells short; the 1st submarginal somewhat

shorter and narrower than the 2nd posterior; supernumerary cross-vein slightly shorter than the mid, which it meets; posterior equal to mid and distant twice its own length. Halteres light. Length, 4-4.5 mm.

Habitat.—Angeles Pampanga, Luzon, P. I. Taken Sept. ? ———.

Described from several specimens sent by Dr. Whitmore.

A well-marked *Taeniorhynchus*, and the white scaled head and thorax and speckled femora make it easily differentiated from the other species, though at first glance it suggests *T. tenax*, Theob.

*Stegomyia Gardnerii*, n. sp.—♀. Head densely covered with broad flat brown and white scales. A very broad median white stripe from occiput to vertex, with a dark brown somewhat triangular brown spot on either side, bordered by white and followed laterally by a brown and then a white stripe; a few bristles around the eyes, projecting forward, two bristles between the eyes; very few or no fork scales; antennæ dark brown, verticels and pubescence dark brown, basal joint dark brown, heavily covered with flat white scales; palpi dark brown with brilliant white tip; proboscis brown; eyes brown, and a white rim around them made of smaller, perhaps spindle-shaped, but not true curved scales.

Thorax: Prothoracic lobes brown, with white flat scales; mesonotum brown covered densely on the median portion, so as to occupy about one third the width of the mesonotum, with dark brown spindle-shaped scales (bronze iridescence), a few curved white scales on the cephalic edge, and laterad, a broad white stripe extending about one half the length of the mesonotum, brown scales exterior to this; a large white spot in front of the wing joint; the caudad half of the mesonotum is dark brown, with a short median line of fine white or yellowish scales, and a short indefinite line on each side, just in front of the scutellum, and here the scales become very long, curved and spatulate flat scales, so they fringe out over the scutellum. Scutellum brown, covered with long spatulate flat scales; brown scaled at the base, with a broad white border on the apical edge; pleura brown, with heavy bunches of white scales; metanotum brown.

Abdomen heavily covered with rather large flat brown iridescent scales, white basal lateral spots of varying sizes on most of the segments and four white dorsal basal spots—one on the penultimate—is lacking on the antepenultimate, and present on the three segments cephalad to this. Ventrally there are heavy white basal spots, so that the venter is at least half white scaled.

Legs: Coxæ and trochanters light brown, white scaled; fore femora white scaled ventrally, otherwise dark brown, iridescent scales; metatarsi brown, with very small basal white spot; first tarsal joint brown with small basal white spot; second, third and fourth joints brown; ungues small, equal and uniserrate; mid-femora dark brown with a few white scales at the base, a small white spot midway on the cephalic aspect, and a white spot near the apex, which under the hand lens looks like a knee spot, but the very apex is brown; tibiæ brown; metatarsi brown, with a small basal white spot, a little larger than those on the fore legs; first tarsal joint with small basal white spot, other joints brown; hind femora white scaled ventrally and dorsally, except a large brown dorsal spot near the apex, which, however, leaves the apex white; tibiæ brown; metatarsi brown, with basal white spot; all the tarsal joints brown, with large basal white spots so wide as almost to include the whole joint on the distal joints, but not always marked on the ventral side.

Wings clear, with brown scales, the median scales large, broadly truncate, and the lateral, which are about twice as long, are comparatively slender, and also truncate; the ventral scales more slender; first submarginal cell is about one-third longer than and the same width as the second posterior; supernumerary cross-vein equals the mid, which it meets, and the posterior cross-vein is a little longer than the mid and about twice its own length distant; halteres have light stem and dark knob.

Length, about 5 mm.

♂.—In general the male differs little from the female; palpi slender, longer than the proboscis, brown, a small white spot at the base of ultimate, a slightly larger one at base of penultimate, a band at base of the ante-penultimate joints, and another white spot nearly as wide as the band, near the base: palpi not tufted. Ungues unequal, the larger uniserrate, the smaller simple.

Length, 3.5 mm.

Habitat—Bulacao, Mindora Is., and Angeles, Pampanga, Luzon Is., P. I. Taken Aug. 20, (Bulacao), Dr. Gardner. Sept. ?, (Angeles), Dr. Whitmore.

Described from specimens sent by Dr. Fletcher Gardner, Cont. Surg. U. S. A., taken at Bulacao.

From Camp Gregg, Bayambang, in the large and interesting collection from Capt. W. P. Chamberlain, referred to above, comes another new mosquito whose wing scales, occurring in connection with flat scutellar



scales, and its extremely short female palpi, are distinctive. As I have only one specimen, I have not been able to demonstrate the exact number of joints, but they must of necessity be few.

O'REILLIA, nov. gen.

Head clothed with curved, forked, and flat scales, much as in *Culex*; scutellar scales flat; wing scales usually symmetrical, very broadly truncate, and notched; palpi extremely short in the female.

The genus is named after Gen'l Robert M. O'Reilly, Surgeon-General, U.S.A., whose broad interest in all scientific study in any way connected with Medical work has made possible many researches, and among them the continuance of this mosquito work.

*O'Reillia Luzonensis*, n. sp.—♀. Head dark, covered with light (almost white) curved scales, very broad forked scales having markedly fimbriate (under  $\frac{2}{3}$  in objective denticulate) tops, which in some lights are white; a couple of bristles between the eyes; white rim around the eyes; white flat lateral scales; antennæ dark, verticels and pubescence light, basal joint testaceous with a few small, white, flat scales; palpi extremely small, dark, with a few white scales at the tip; proboscis mostly yellow scaled, the base, and a very narrow rim at the apex being dark brown; clypeus brown; eyes brown.

Thorax brown; prothoracic lobes with flat, somewhat spindle-shaped white scales; pleura testaceous; scutellum brown, with brown and white, rather long, flat scales on the mid-lobe, lateral lobes with white flat scales; metanotum brown.

Abdomen light, covered with dark brown and orange-yellow flat and somewhat spatulate scales, irregularly placed so as to be "speckled"; venter rather lighter than dorsum, but "speckled"; light apical hairs.

Legs all light; all coxæ and trochanters covered with brown and yellow scales; all femora and tibiæ speckled yellow and brown and are darker than the rest of the legs, ventral side lighter; fore tibiæ are dark, the metatarsi and tarsal joints light with faint brown spots; mid-tibiæ are dark near apex and the metatarsi and tarsal joints are all light, with faint light brown spots on some of the joints; the hind tibiæ are dark near apex, metatarsi light, and the tarsal joints brown; *i.e.*, light brown, with light basal bands on the first, second and third joints, the fourth joint covered entirely with the light brown scales. Ungues simple and equal.

Wings clear, covered with brown and white (or light yellow), broad scales, the apical ends truncate and notched; the ventral scales obovate



or clavate and very thin and white. There seems to be no arrangement into spots, the wing being simply "speckled." 1st submarginal cell is nearly twice as long and a little narrower than the 2nd posterior cell, its stem being about one-half the length of that of the posterior; mid and supernumerary cross-veins are about equal and meet, the posterior cross-vein nearly twice as long, and a little more than its own length distant. On the costal edge the scales show something of the spinous shapes found in *Uranotaenia*. Halteres light.

Length 3.5-4 mm.

Habitat — Bayambang, Pangasinan, Luzon, P. I.

Taken Sept. 11, "Outside screens of screened house. Rainy night."

Described from one very perfect specimen sent by Capt. Chamberlain, from Camp Gregg.

The wing scales are as broad in this genus as those usually found in *Mansonia*, the large notch or indentation at the apex being easily recognizable, and in connection with the flat scales on the scutellum are distinctive. No metallic scales occur on the insect.

(To be continued).

## COLLECTING MOTHS IN THE AUTUMN AND WINTER.

BY HENRY ENGEL, PITTSBURGH, PA.

During October and November, 1904, I had the pleasure of learning some interesting features of the habits of a certain group of moths which appear at that season of the year. The abundance of these species under seemingly very unfavourable climatic conditions was a great surprise to me. The observations made on these hardy creatures of the insect tribe may prove interesting to Lepidopterists who are willing to exert a bit of energy in the pursuit of their hobby. During the last few years I have learned that we must take the topography of the country into account in selecting a place to bait for the moths, which appear after we have observed the first autumn frosts on the landscape. I will, therefore, briefly describe the vicinity of my collecting grounds. My home is situated in a ravine, back of the hills south of Pittsburgh, Pa. The difference in the altitude of the valley and the hilltops is about five hundred feet. On the slopes near my house are about twenty-five acres of woods, consisting chiefly of oak, ash, maple, a few hickory, elm, locust trees and very little underbrush. Beyond this woods are pasture fields and farm lands, the fences of which are lined with wild cherry trees.